

RE report on SOD comments of Chapter 7 of AR5 WG2

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I Main areas of concern and issues that have to be addressed (Comment numbers in parenthesis):

GENERAL:

The most valuable comments have come at this stage. These are much better than those for FOD. I see that the author team could use the present comments to yield a perfect Chapter 7, in case you have time and effort to spare for this work. There are also comments that make no sense to me, e.g. those where someone “doesn’t understand the sentence”, or those that demand attention to something that is already there. E.g. comment 28 demands deeper treatment of importance of soil organic matter, but it has been treated very well (p. 33, lines 43-51, p. 38, line 2).

Many comments, even from the TSU, demand more info in Executive Summary (ES from now on), although it refers to the chapter paragraphs (e.g. comment 115, 145, 150 and many others). I don’t think it would make it clearer and easier to read if the summary would tell everything that is already described in detail in the chapter. There seems also to be a problem connected with planning the report and the practical writing performance. E.g. there are four sections, 7.2.1.2., 7.3.2.6., 7.4.2. and 7.5.1.1.3., where Fisheries are treated, and there must be overlapping text in these (comments 550, 787). Another, but more extreme case is sections 7.2.1.3. and 7.3.2.4., where the first one is a stunt and is proposed to be removed totally (341), while the second one is good. Maybe because of lack of new information, the section for livestock is missing totally from 7.4., where it should be if the scheme was consistent (636), but appears again as 7.5.1.1.2.. It seems waste of space to return to the same issue time after time, when it could be explained under one title.

There are demands for simpler and more reader-friendly text with less subsections etc. and with more analysis made by the authors rather than just stating research results (2,31,40,52,61). On the other hand, TSU seems NOT to want colorful and easy to read text. When you try to write that, you get instant criticism (e.g. see comments 186, 622, 641).

Many of the commentators must be modelers, as any statement concerning modeling causes lots of emotions and hot discussions (e.g. 386,387,389-392,394-405). Specific comments include: Crop models should be treated with more criticism (22,260,376); new developments in modeling studies should be better described (42,47); economic models are missing from section 7.3.1 (362,364); fisheries models are missing (367); and finally: there are new models being developed, and thus modeling cannot be seen as research gap (845).

My suggestions for new members in the author team: Carlo Scaramella from World Food Programme has given a lot of good comments, I suggest to include him in the author team, e.g. to correct the food security parts. Also Andrew Moore from CSIRO and Reimund Rötter MTT Finland might be good additions to author team. Their comments are sensible and they also can present new references.

SPECIFIC:

A very regretful thing is that there seem to be incorrect citations to articles? Some cases have been detected by the reviewers, but how many still remain? How did these come to be in the SOD? I guess

someone has given the author team an article of his or her own, but it doesn't really have to do with the subject? Has the author team checked all given articles before including them? See where the comments refer to:

- 1) "The percentage of 60% is a **misreading of Figure 2 in the original FAO (2012) report**. That figure reports absolute numbers and percentages, however the 60% is obtained by using the line indicating absolute numbers in combination with the axes for percentage (right axis). The accurate number is about 28%, also see Table 1 in the same report. Change accordingly." (228).
- 2) **Case Lake Chad seems to be untrue?** (330).
- 3) "The authors appeared to have chosen the **highest estimates when multiple were available**" (yield reductions, p. 15, lines 34-37) (454).
- 4) "The Deutsch 2008 **paper does not consider the effect** of climate change on insect damage to plants, and is thus inappropriate as a reference to this statement." (494).
- 5) "Suggest deleting 'such as African horse sickness and bluetongue' from the sentence beginning "Vector-borne diseases..." as **Cutler et al. 2010 mentions neither illness.**"(515)
- 6) "The source cited (Masike and Urich, 2008) **does not contain the information** in the two sentences "In Kgatleng District..." and "At the same time..." (520)
- 7) **Other comments about invalid references:** 572, 575, 623, 663, 778, 783, 810, 820
- 8) **In some cases the criticism may not be founded**, as in comment 600 "Delete the reference to Kassie et al. 2008 as it is not about 'lower likelihood of applying purchased inputs such as fertilizer...' but rather about the impact of stone bunds on crop yields.", when actually inside the article (thus not in the summary) there was the following text: "Rainfall in our Amhara study sites therefore averages approximately three times that of Tigray. Differences across the two regions are therefore very large..... Fertilizer use averages about 40 kilograms per hectare in Tigray and 47 in Amhara for matched sample households.", which seems to fit the issue well enough.

There are lots of suggestions for better wording to avoid misinterpretations, corrections of spelling mistakes, corrections of wrong attributions to chapters etc. Sometimes very good suggestions for new wording are given. I suggest that you take these corrections very carefully into account. Here are some examples that especially got my attention:

- 1) See e.g. comments 44, 45, 152-155, 157,158, 196, 256, 320, 435, 441 for obvious corrections.
- 2) On p. 3 lines 38-44 one could get the impression that warming increases crop yields until 3°C increase in global temperatures and thereafter not any more, although it probably is meant that adaptation will help to reduce losses until 3°C, and thereafter not? See comments 165-166, 169, 171.
- 3) Cold regions are better referred to as North-East China, Canada, northern areas and parts of Western Europe, or just high latitude regions, see suggestions in comments 270-272.
- 4) Coral reefs come unexpectedly on p. 8 lines 37-40, and also they are not "described earlier" (295, 296, 298, 299, 300).

- 5) Historical trends in food production without anthropogenic climate change have been studied. See comment 257 for references for p. 6, line 49-p. 7, line1.
- 6) There can be found climate trends in Canada, Figure 7-3- seems to claim different (278)
- 7) It is confusing that you say in 7.2.1.3. that little has been published on livestock and climate change, yet you present a long story in section 7.3.2.4. This small paragraph is causing a lot of unfounded criticism. Should it be removed totally? (335-341)
- 8) “The reason why adaptation in tropical maize makes predicted yields lower is counter-intuitive but not explained. Why?” (442)
- 9) Migration to North – could as well be to South in Southern hemisphere (485, 516)
- 10) p. 23, line 28: Reference to Box 5-3 is incorrect, perhaps refer to Box CC-OA or section 5.4.2.4? (577,578)
- 11) p. 25, lines 11-16 don’t seem to belong to the context (596)
- 12) Climate is confused with weather (80,83)

Formal corrections needing attention and coming mostly from TSU

The paragraphs in ES should follow the contents of the chapter (109,150,151)

Refer more to other AR5 WG:s and also other WG2 chapters (8, 10, 29, 53, 54, 59, 121, 237, 297, 304, 307, 318,519,551,557,558,635).

State clearer what is new since AR4 (41,132,408,442)

Maximize nuance and traceability in key findings, add literature to support your claims, if you say there is an effect, tell what kind of effect and support it with literature (=how did you come to a calibrated language conclusion) (59,61,70,71, 109,110,111,112,113,116,118,124,126,128,160,161,263,281,328,412).

Word LIKELY is still an issue (e.g. comment 163), as well as usage of non-calibrated evaluation statements (e.g. 207, 547-548) and vague statements (e.g. 579,580)

Time frames and baselines have to be presented for changes

(93,105,106,108,117,119,214,224,265,277,289,357) (already in FOD comments the TSU asked for time frames and scenarios).

Corrections, with very much attention given to:

New studies and publications are suggested (e.g. 7, 34, 47,75,76,191,192, 204,...308,309,312,362,449, 482,...). In comment 362 I read that a separate file with references has been sent, but I haven’t received it. Even though it is impossible to quote everything that has been written since AR4, it would be good for the report if the quotations were not so much concentrated in Europe, USA and Australia. However, often the commentators just demand references, but don’t give them (e.g. 36, 331). Or they give something like “Naresh Kumar et al. 2011”, which could be found in Web of Science (four of them), but had nothing to do with the subject in question (626). I don’t think it is then your responsibility to find them, at least if they are just an addition to a list. In case of non-English speaking references like in comment 7, help could be

provided by the writing team members with large language skills or those naturally Chinese-Spanish-Indian languages-speaking members of the author team. The other CLA is Chinese. Has he contributed or could he contribute with Chinese references?

Food security is suggested to be treated more profoundly, not just food production (19,30,39,48,50): Add a paragraph on analysis of potential economic policy measures and economy implications (24,25,60), add a picture (30), add human behavior (39), add animal welfare (204). "Take care that you don't put yourself in the corner" saying that food security doesn't depend so much on production as on other things (209). However, one comment suggests not to separate the discussions of food security and food production (334). Section 7.2.2. looks like it was stunted, not containing the elements that already were in Figure 7-1 (342-345).

Corrections that seem otherwise important

Effect of biofuels on food price is questioned (350-352). Other factors may be as important, such as increased affluent diet and high living standard that allows buying expensive food (352). Other elements of demand and supply as well as market speculations etc. should be included (353). Also effect of input prices is important (351, 360). This was also suggested in comments for the FOD (comment 185 of FOD), but you didn't react to this comment then. I suggest you include it here now.

Remote sensing statement on p. 11, line 4 should have references (370). See studies of Heikki Laurila et al. 2010: Remote sensing 2:76-114 and Remote sensing 2: 2185-2239.

Effect of diet on food security: more vegetarian diet would help to satisfy caloric needs (31,32). I think this issue has been treated quite well on p. 24, lines 41-448, but it is written there that there are no references about this. The comments also don't include references. There is a publication that you could refer to: Hakala, K., Kontturi, M. and Pahkala, K. 2009. Field biomass as global energy source. Agricultural and Food Science 18: 347-365. Also note that there are many obese people, see comments 191, 216. Obesity seems to need more attention, even though it is mentioned on p. 4 line 32.

Effect of food waste on food security should be treated better (33, 723: good references included). Food waste throughout the chain would be good to add also in Figure 7-1 (884).

Potential of **small holder agriculture** should be more visible (34). More attention should be given to **rural poor** and how their food production is especially vulnerable to weather and thus climate change (see a good suggested text in comment 234, and add references, which are not really much provided, except in comments 239 and 242, where e.g. this could be found: <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7660.2012.01779.x/pdf>). See also reference given in comments 246 and 349. The last seems to me like a very good comment.

Arable land area may decline (95,96,97). Clarify the change (106,107)

Also mention pests (insects etc.) on p. 3 lines 32-36 (149,162)

Comments 217-221 don't accept the phrase that vast majority has enough food. You could write a percentage, as suggested (222-223).

There are lots of references for effects of high temperatures on yields of cereals (419,425). One in addition to those mentioned in the comment could be: Hakala, K., Jauhiainen, L., Himanen, S.J., Rötter, R.,

Salo, T. & Kahiluoto, H. 2012. Sensitivity of barley varieties to weather in Finland. The Journal of Agricultural Science (Cambridge) 150: 145-160. I could guess that Reimund Rötter included some too in his paper (that I haven't seen). See especially comments 419 and 425 for new info and good references (rice would be especially important, comment 425)

Could you add on p. 14 lines 10-26 text about trade-offs between temperatures and rainfall, as suggested in comment 436.

Pastures in tropic and Africa should be given more attention (497,498)

Diversification of agriculture is not in sight at least in EU, where policies direct to the opposite (768). EU subsidy policy also doesn't support adaptation (addition to page 41, lines 30-32, comment 858)

More explanations and references, more detailed data as well as description of statistical tests are required for Figures (884-936)

Contrasting views:

Not enough risk assessment and explanation how risks could be avoided (51,58,69). The future with climate change should be presented more threatening (27,66).

→ *Another opinion: "This is all standard alarmist fare. Why don't you emphasize positive trends" (73,100)*

Soil organic carbon is important (757, 758, 760)

→ **Another opinion: "The importance of SOM is not well justified by literature"** (759)

Others:

Praise of author team also occurs, sometimes with demand to put more of your text to SPM and TS (1,17,333,591,655,687, 791).

Curiosity: Comments 173 and 174; 261 and 262; 415 and 416; 585 and 586; 672 and 673; 751 and 752; 780 and 781; 788 and 789; 797 and 798; 800 and 802; 801 and 803 are similar word by word, but sent by two different persons from two different organizations?

II Did SOD fully address the FOD comments? The work of author team with FOD comments was good, but not totally satisfactory

Most comments were taken into account very well. I am mostly satisfied with the friendly style of the author team. In opposite cases, please correct the answer. I attach a file for the author team where I have indicated need to correct (text with red font).

In some cases the author team says that the comment doesn't deserve attention, but has corrected the text anyway according to the comment. Even though the author team didn't fail to correct the text, but succeeded brilliantly, I suggest that you write your answer according to the work done. I wrote comments about this also in the attached Excel sheet.

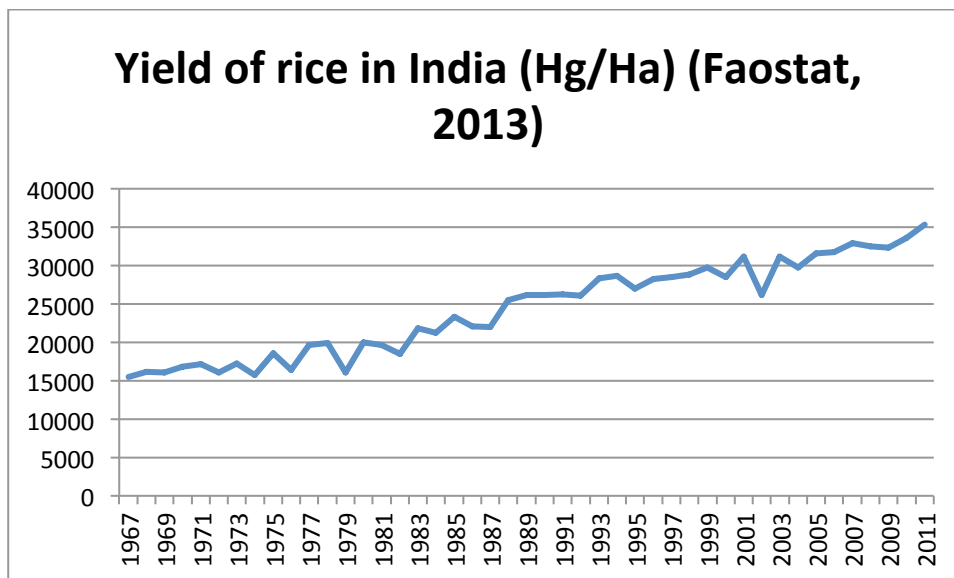
I noticed some **flaws in the author team answers to the comments**:

1. Sometimes the author team answers that the comment doesn't deserve attention. In some cases I agree with the author team, but there are many cases where I feel that the comment needs to be addressed. I have expressed my opinion with red font in the attached file.
2. There are many cases where the author team answers that they will correct text, but they have failed to do so. I have notified these cases in the attached file with red font.

Some further details got my attention:

Bruce McCarl seems to get few comments through – Andrew Moore gets almost everything through – why? I'm afraid someone might see personal preferences, dislikes and likes here.

Indur Goklany has many comments that are not relevant to this chapter, but there are also comments that ARE relevant, and I would like these comments to get the attention that they deserve. E.g. comment 135 IS relevant, and what he said is easy to check:



Author team members:

Andrew Moore, Bruce McCarl and Reimund Rötter could have been included in the working group as contributing authors, as they had lots of comments and have lots of knowledge and publications. I suggested the first two in my RE report for FOD, but they were not taken in the team, even though four new members were taken. Two of those taken are from USA, one from UK and one from Australia. The new recruitments failed to enlarge the country selection. My suggestion was not better, though.